Ministry of Higher Education and Scientific Research

Al-Zahrraa University for women

college of Pharmacy

The second phase \ Medical Microbiology

Flagellates

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Flagellates Of Intestinal Tract

Giardia lamblia

Location: Small intestine (Duodenum).

Pathogenic: Giardiasis or lambiasis.

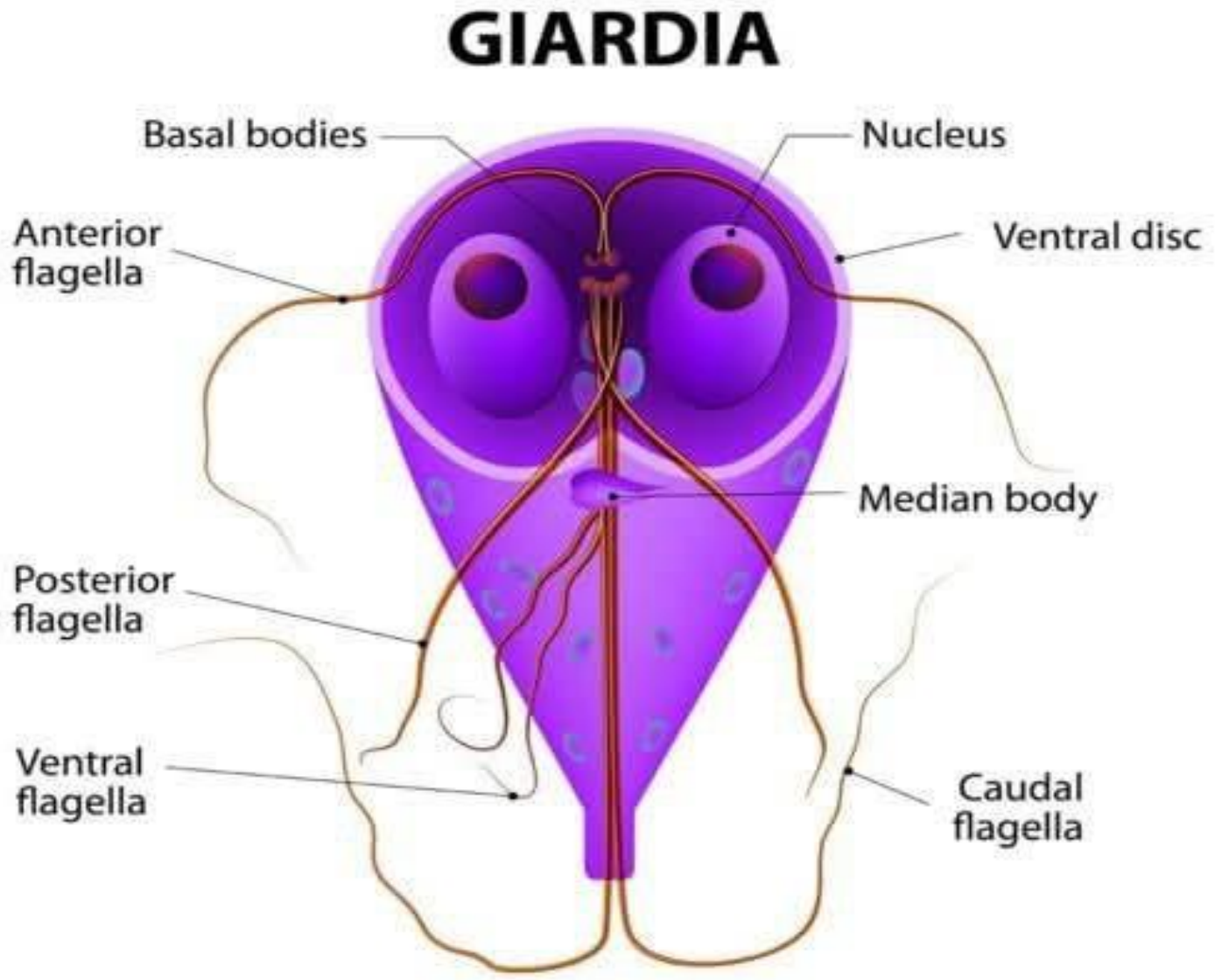
Two forms: Trophozoite and Cyst.

General Characteristics

- Reproduces via binary fission
- Bilaterally symmetrical Pear shape
- Broad round anterior and tapering posterior.

Giardia lamblia

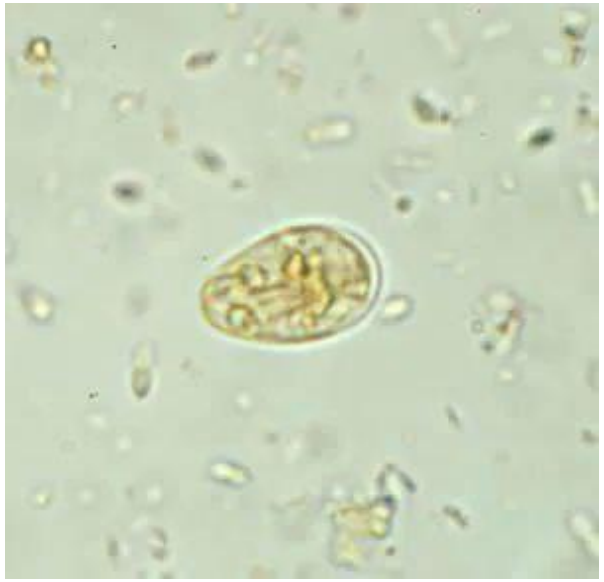
- Convex dorsal surface and concave sucking disc.
- Flat ventral surface
- Two parabasal bodies
- Two nuclei with large central karyosom
- Four pairs of flagella.
- Attached to the epithelium by a ventral adhesive disc or sucker

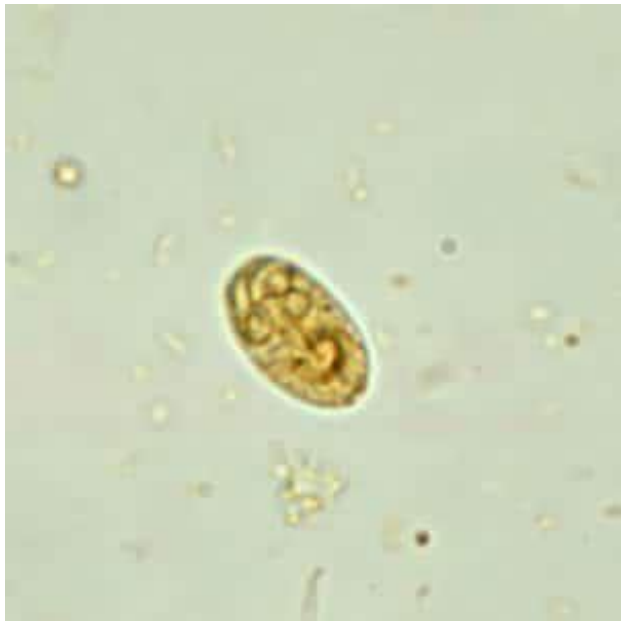


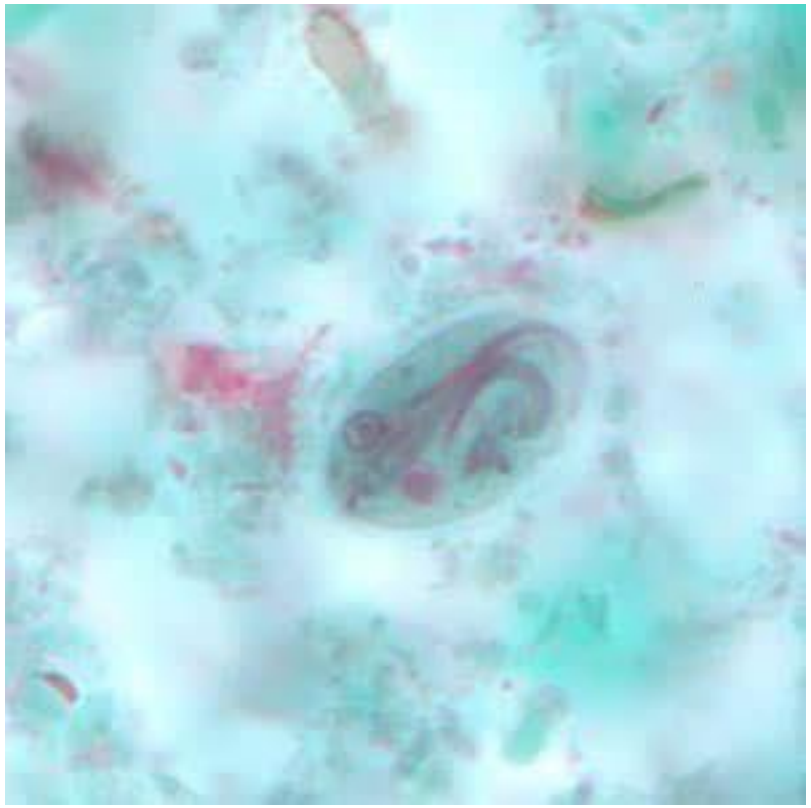
Trophozoite of *Giardia lamblia*

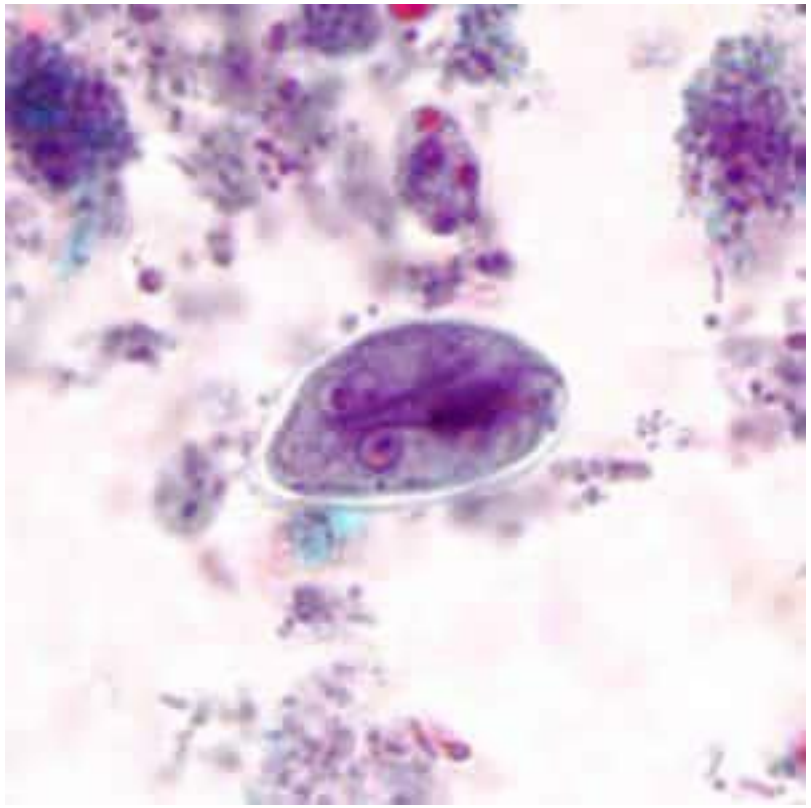
Cyst

- Oval in shape
- They have smooth well defined wall
- Contains four nuclei
- Contain parabasal bodies and flagellates
- Cysts survive in the environment longer in cool, moist areas
- Giardiasis is often seen in the form of symptomatic waterborne outbreaks.
- Giardia species are endemic in areas of the world that have poor sanitation.





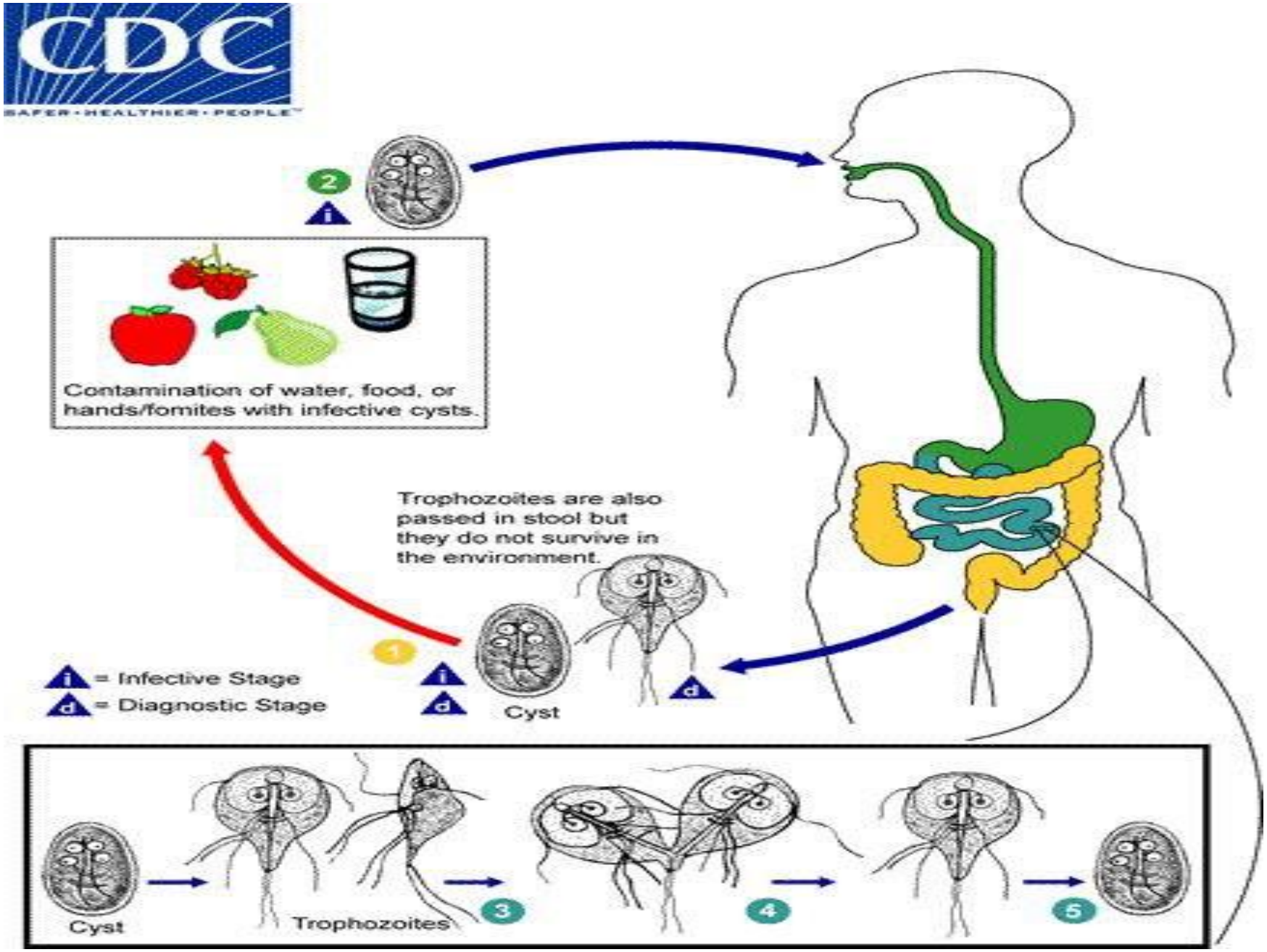




G. duodenalis cyst stained with trichrome.

Giardiasis

- Giardiasis is a major diarrheal disease found throughout the world.
- Its causative agent, is the most commonly identified intestinal parasite.
- The flagellate protozoan Giardia intestinalis (G. lamblia or G. duodenalis).
- G. intestinalis can cause asymptomatic colonization or acute or chronic diarrheal illness.
- Giardiasis does not spread via the bloodstream, nor does it spread to other parts of the gastrointestinal tract, but remains confined to the lumen of the small intestine.
- Giardiasis usually represents a zoonosis with cross-infectivity between animals and humans.



Life cycle of Giardia lamblia

Mode of infection:

1. Contaminated food or water.
2. Flies and food handlers.

Symptoms

1. Diarrhea
2. Gas
3. Foul-smelling, greasy stools
4. Stomach cramps or pain
5. Upset stomach or nausea
6. Vomiting
7. Dehydration (loss of fluids)

Diagnosis

1. Direct stool examination.
2. String test.
3. Serological tests.

Treatment of giardiasis

1. Metronidazole or Tinidazole
2. Recently Albendazol

Flagellate of Genital Organs: *Trichomonas vaginalis*

Morphology

- It lives in the reproductive and urinary system of people (obligate parasite)
- Trichomonas differs from other flagellates, as they exist only in Trophozoite stage.
- Cystic stage is not seen.
- Pear shaped
- 4 flagella extend anteriorly
- 1 flagellum extends posteriorly along the cell membrane to form an undulating membrane

•Costa, a rigid cord attaches the undulating membrane to the cell membrane and gives the undulating membrane support

• Axostyle runs down the middle of the body and ends in a pointed tail like extremity.

• Round nucleus in the anterior portion

• Characteristic jerky motility

• Multiplies by longitudinal binary fission.

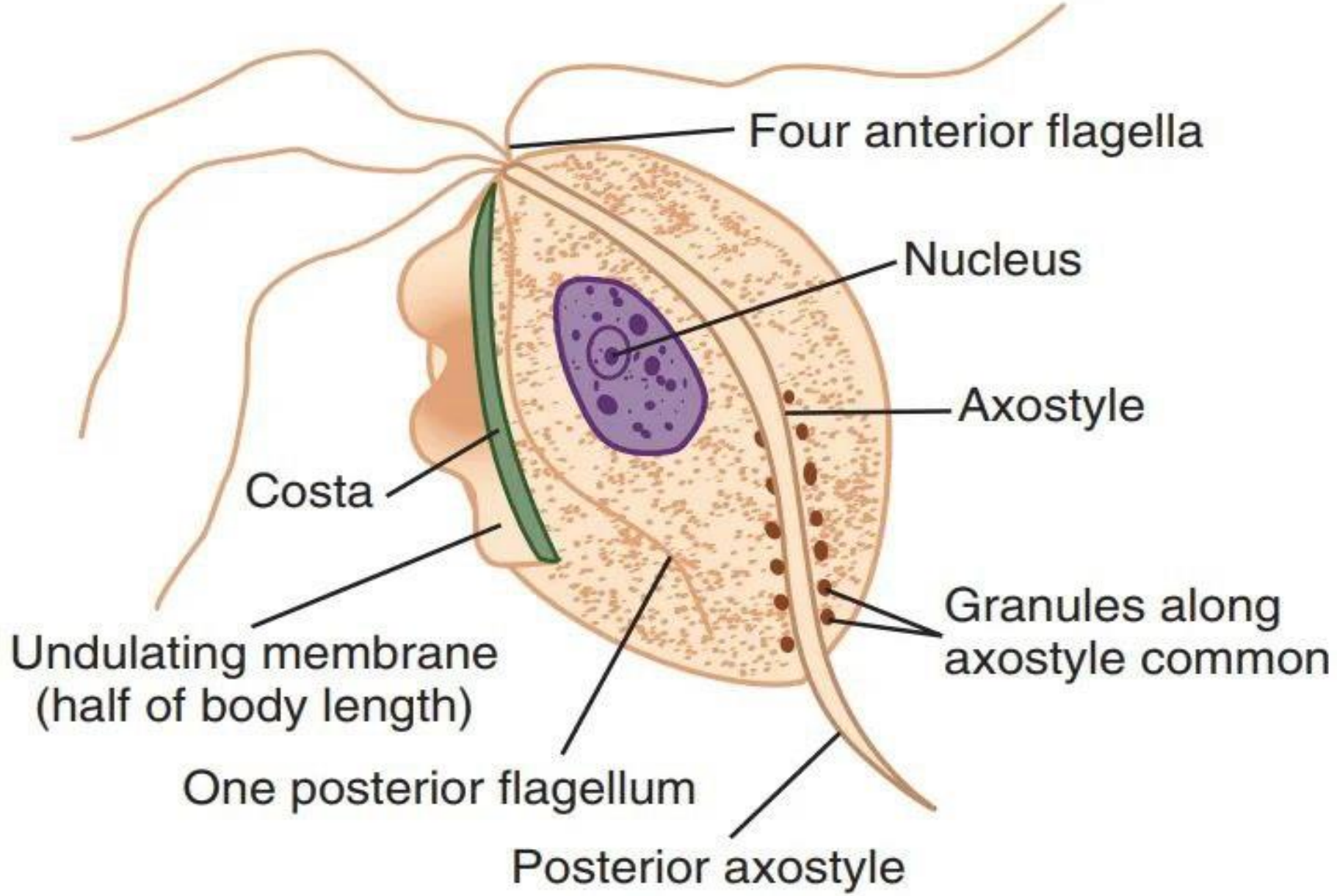
Trichomoniasis

• Infection of the vagina or male genital tract with Trichomonas vaginalis. It can be asymptomatic or cause urethritis, vaginitis, or occasionally cystitis, epididymitis, or prostatitis.

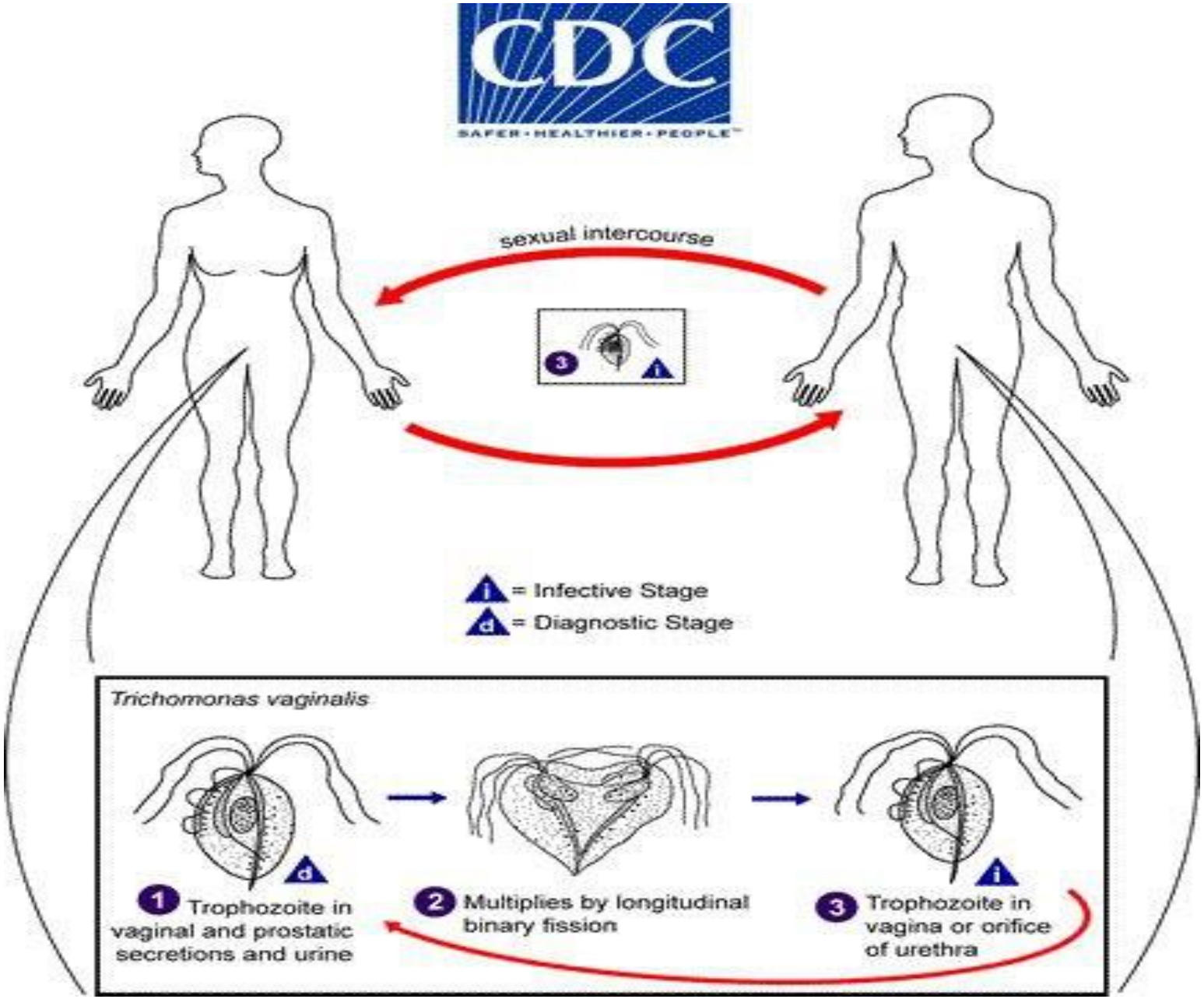
•In females, it may produce severe pruritic vaginitis with an offensive, yellowish green, often frothy discharge, dysuria, and dyspareunia. Cervical erosion is common.

• Endometritis and pyosalpingitis are infrequent complications.

• The incubation period of trichomoniasis is 4 days to 4 weeks.



Trichomonas vaginalis trophozoite



Life cycle of *Trichomonas vaginalis*

Laboratory Diagnosis

1- Microscopic examination: Vaginal or urethral discharge is examined microscopically. In males, Trophozoite may be found in urine or prostatic secretions.

2- Direct fluorescent antibody (DFA).

3- Serology ELISA is used for demonstration of T. vaginalis antigen in vaginal smear using a monoclonal antibody.

4- Molecular diagnosis:

- DNA probes-more sensitive and highly specific.
- PCR- highly sensitive and specific.

Treatment

- Metronidazole
- Tinidazole